



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

18-in and 3-ft Wave Flume Facility

Description

The Engineer Research and Development Center, Coastal and Hydraulics Laboratory, maintains and operates extensive laboratory facilities used for designing and testing coastal structures. Large two-dimensional wave tanks are used to test designs for rubble-mound trunk armor stability and to quantify wave runup, overtopping, and transmission.



18-in and 3-ft flumes located in building 6006

Specifications

Two glass walled wave flumes are used to support research and site-specific studies. The flumes are both 45 m (148 ft) long and 0.91 m (3 ft) deep. One flume is 0.46 m (18 in) wide while the other is 0.91 m (3 ft) wide. Both two-dimensional glass-walled flumes are equipped with computer-controlled electro-hydraulic wave generators. The wave generators are capable of creating irregular waves with a maximum wave height of 0.23 m (0.75 ft), and wave periods of 0.50-10.0 secs. The facility includes an automated data acquisition and control system.

Benefits

Measuring overtopping rates for different structural configurations during storm conditions would be very difficult and expensive outside a controlled laboratory environment. Structure cross section can be easily optimized in a scale model test. An important tangible benefit of verifying designs in the laboratory is reduction of future maintenance and repair costs over the structure life as well as reduced risk of failure.

Application

The 0.46 m (18-in) and 0.91 m (3-ft) wave flumes have been used to support a wide range of projects including many site specific and generalized R&D. Rubble mounds, stepped-seawalls, recurved seawalls, floating breakwaters, pile-supported structures and military structures have been tested on the flumes. Wave transformation studies, blast induced waves and tsunamis have also been modeled in the flumes.

Point of Contact

Dr. Jeffrey A. Melby, U.S. Army Engineer Research and Development Center,
ATTN: CEERD-HN-H, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199;
e-mail: Jeffrey.A.Melby@erdc.usace.army.mil. Additional information can be found at <http://chl.erdc.usace.army.mil>.